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Implementation of Voting Machine using Blockchain

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ABSTRACT: With the advancement of cryptocurrencies, bitcoin and usages of applications blockchain has plays a important role in today's scenario.Based on ethereum block chain a decentralised voting platform is designed for cheaper, safer, faster public electoral process.To facilitate transparency,time efficient voting platform is designed to overcome existing problems in existing system which is time consuming, costlier, less secure.Truffle frame work is employed which provides efficient results.

KEYWORDS: Block chain, ethereum, decentalised, IOT, Peer to peer.

I.INTRODUCTION

The technology that powers all cryptocurrencies, apps, smart contracts,etc. Is called blockchain technoogy,and it also has a wide range of additional uses. The bitcoin networkwas the first application to be created on the Blockchain. Blockchain is a peertopeer (P2P) network model that seeks to overcome the underlying flaws of the trustbased model. When processing electronic payments over the internet, typical banking processes are used.A system based on cryptogr aphic proof rather than trust is created by blockchain, allowing any two willing party without the assistance of a reliable third party,parties can conduct business directly with one another. the blockchain discovery that is groundbreaking, since since it resolves the issue of double expenditure. It employs a Peer to peer,the creation of computational proof for transactions via a distributed timestamp server.
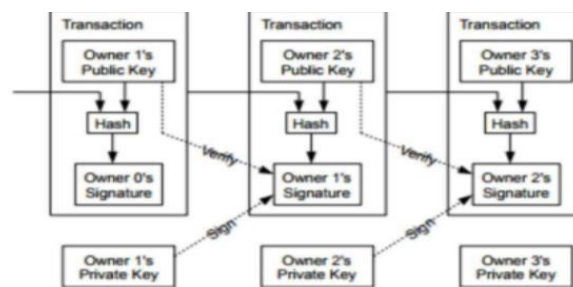

figure.1:Distibuted time stamp server

Although blockchain can be used for a wide range of purposes,the majority of them entail the safe transfer of ownership of small objects(the most typical example of this is the exchange of currency, such as Bitcoin, Ether,etc.).Such transfers ownership to the succeding one, In such transfers each consist of a single transaction. Each owner electronically transfers ownership to the succeeding one. Signing the public key of the upcoming owner and a hash of the preceding transaction. Payee can confirm the signatures to confirm the ownership chain. Transactions must also be made publically known.Every node in the network must concur on a single history of the sequence in Which they were created and received. The payee must provide evidence that the majority of nodes concurred on each transaction at the time it was made.

Consider Blockchain as an operating system and Bitcoin as the first application. It is crucial to understand that Blockchain, the underlying technology, has 700 applications, of which Bitcoin is just one. Blockchain's development has proven disruptive. Let's use an illustration to support it. We initially communicated verbally to speak with

individuals, a period known as the verbal communication age. Through the use of telecommunications, people can now communicate synchronously with others worldwide. Worldwide scalable asynchronous communication is now possible because to the internet.Consequently, the internet of information that we utilize today. And the internet is made possible by the Blockchain of worth.

Blockchain has many great uses in the banking, internet of things, transportation,voting, government, healthcare, retail, and real estate industries,to mention a few.The organizations that employ this technology have the potential to become transparent, democratic, decentralised, efficient, and secure.

An illlustration of the industries that Blockchain is currently disrupting or my soon disrupt is shown below:

1.Banking:Blockchain can be used to provide financial services to billions of people worldwide,whereas Bitcoin can be used to transfer money across the globe almost immediately without the use of third party. Blockchain technology is revolutionizing the world of money transfers.

2.Automated Blockchain ledgers can be used to track various Internet of Things (IoT)devices.

3.Internet and Transport:To monitor the shipment of your goods and keep them in good condition while in transit. Peer-to-peer networks will allow blockchain to be used in the field of transportation. apps that share rides. Blockchain technology will enable usage in the transportation sector thanks to peer-to-peer networks.

 Ethereum:It is a decentalised platform that supports smart conntracts,according to ethereum website.Although this accurately describes what it is, it is not very helpful for the average person to grasp.

The Ethereum blockchain network aims to build a trustless system where people or organizations can engage with one another about financial significance without actually needing to trust one another. Technology guarantees that the system eliminates out the middlemen or intermediaries and operates as intended.

As for Ethereum,It is possible to make transactions trustless, which opens the door to a wide range of decentralized applications. Ethereum is frequently referred to as the blockchain of the future.

	bitcoin	ethereum
concept	digital money	smart contracts
transaction	send from alice to bob	send from alice to bob if... • date = jan 1, 2018 • bob's balance < 10 eth
market cap	~$18 billion	~$1 billion
founder	satoshi nakamoto (unknown)	vitalik buterin and team
release date	jan 2009	july 2015
release method	early mining	presale raised $18M in bitcoin

Figure 2:Difference between Ethereum and Bitcoin

In conventional contracts, middlemen like governments construct the laws .On the other hand,anyone can write laws in Ehereum,Smart contracts are the name given tothese new rules.These are pieces of computer code that are executed and saved on a blockchain. They act as the decentralized applications backend. A wise who owns what can be documented in a contract.There is no counterparty risk for digital assets in the sensethat when acontract is made, the object of value is locked into itand released when the terms of the Contractual obligations are fulfilled.Instead of ATMs,the   actual controller of assets is a piece of code or software.The system also utilises tens of thousands of computers throughout the world to distribute the burden. Ethereum creates things that a blockchain using a built-in Turing complete algorithm, which is essentially the most abstract underlying layer.

II. LITERATURE SURVEY

Ali Kaan Ko et al. Describe about voting solution based on ethereum block chain in their paper entitled "Towards Secure E-Voting Using Ethereum Blockchain" here a secure E-Voting system which is fully transparent and no duplication of votes can be detected. Usage of E-Voting as a smart contract and only with valid EOA the user is allowed to vote.Tarasov.et.al in their paper gives insight on integrity,privacy and transparency in decentralised applications using blockchain.here challenge handshake protocol is used to identify first the user for registrationfollowed by verification in data base.Fernando Lobato Meeser, in the paper "Decentralized, Transparent,describes about Trustless Voting in Ethereum Blockchain" and provides a view on accessibilty of anyone to tabulate the results fprior to vote casted from smart contractors,secondly, the anonomous nature of the votes is viwed using public key to provide security.Threshold keys and linkable ring signatures are used in ethereum. However , this process undergoes registration phase, followed by casting vote which depend on centalised authority for registration using public key.Patrick McCorry et,suggest about privacy which is achieved by Open Vote network,Direct electronic recording with integrity and DRE -i with improvised privacy.

III. OBJECTIVE AND PROBLEM STATEMENT

The democratic process of voting is more important than ever in the modern world due to widespread mistrust of the government and foreign actor's intervention in domestic affairs.There have been constitutionally guaranteed fundamental liberties were curtailed, and their human rights were abused.

A fair and transparent election is essential for the freedom that the majority of people now enjoy in such a setting. People or groups aiming to achieve power are taking advantage of the drawbacks of the present ballot voting mechanism. The current election procedure does provide voter anonymity, but the counting procedure is opaque.People are expected to believe in the results that a government or election body provides. This makes the counting procedure a significant weakness in the existing approach. Then there are other significant election frauds, including ballot stuffing, booth capture, and voter fraud. These factors all contribute to it.The extremely challenging for election organizers to discern between the votes cast in the election.

In this paper we have suggested an Ethereum Blockchain-based decentralised voting system This notion of modifying digital voting technologies to make public elections more affordable, quick, simple and is a captivating one in in contemporary culture.

Additionally, it makes way for a directer type of democracy, enablingvoters may cast their ballots online from anywher e in the globe, and they can check to see if their vote was successfully counted.

IV.SYSTEM DESIGN
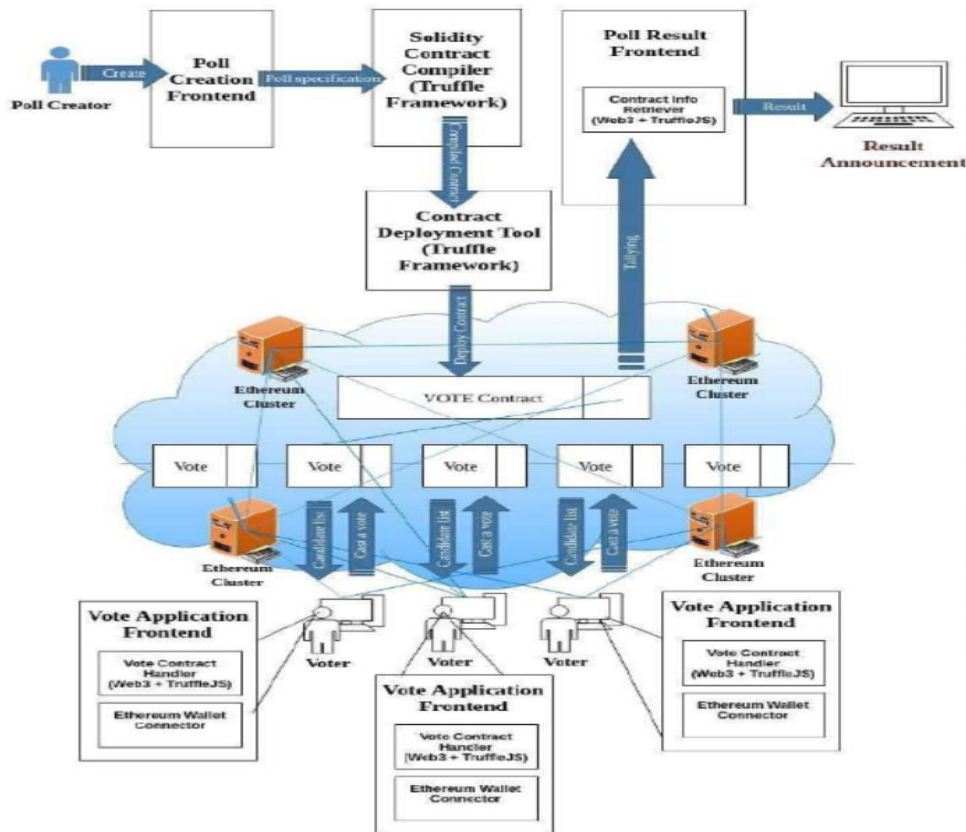

Figure 3:System Design

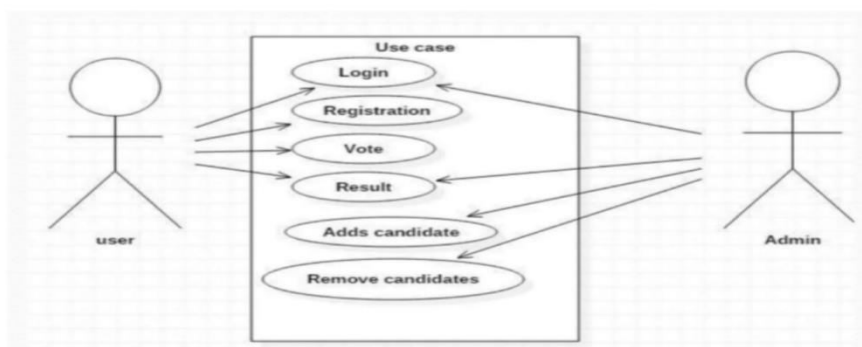Figure 4: Design flow

Figure 4 and 5 shows system design and its flow,the user has to login ,undergo registration process,cast vote.the administraor has the privilege to add and remove candidate using ethereum.Blockchain technology provides democratic nations with a new opportunity to move beyond the switching from a time- and money-consuming pen-and-paper election system to one that increases the security measures in the current system while maintaining the current system's security measures and present fresh opportunities for openness.

V. IMPLEMENTATION AND RESULT

Setting and Starting Development Environment
Open 3 command window or terminal from project root directory
Terminal 1: ganache-cli (using -a from no. of account)

Figure5:private keys generated

Terminal 2:
Step 1: cd Ethereum & Compile the contract.

Step 2: Run the server

Terminal 3: cd client & npm start

Step 1:
Compile and Deploy the Election Factory from the home page: http://localhost:3000 Click on
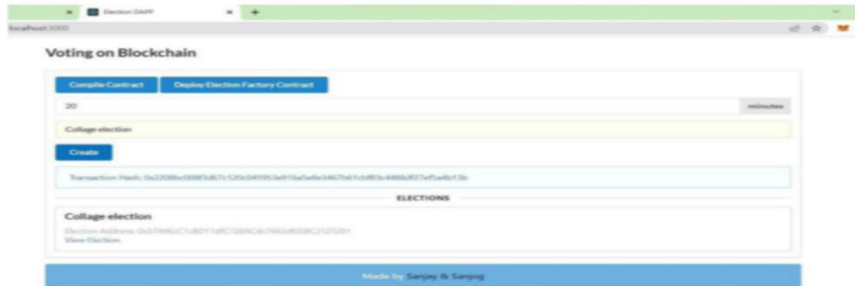Compile to compile the contract
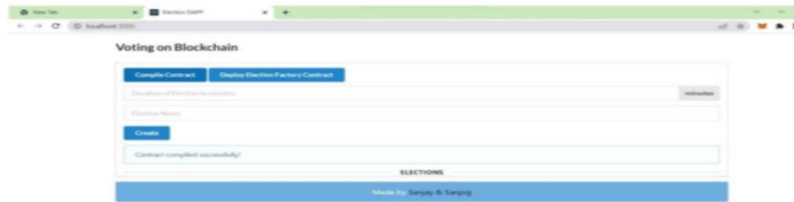
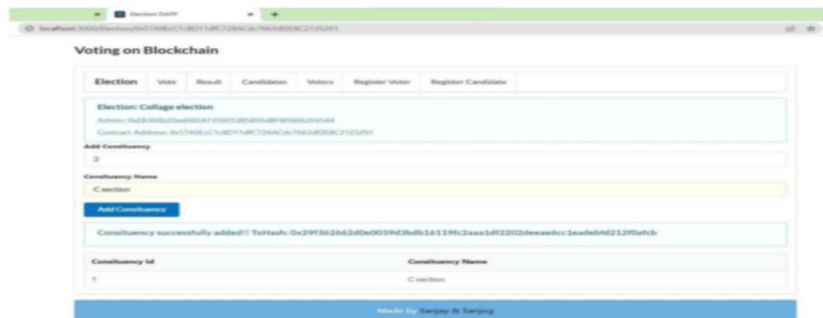Click on Deploy to deploy the contract.
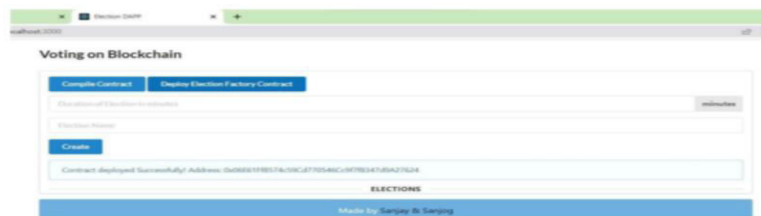
Step2:

Create new Election. Pass duration of election in mins and Name of the election. Click on Create

Step 3:

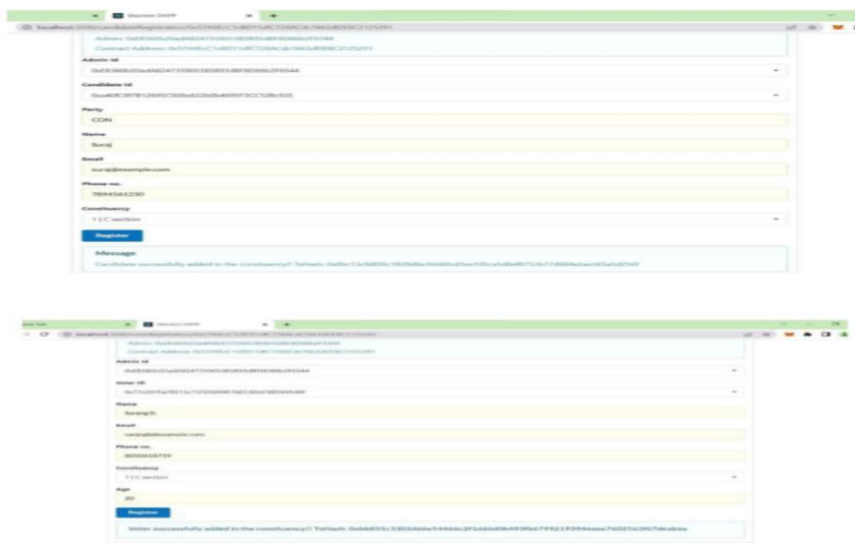Go to the new Election
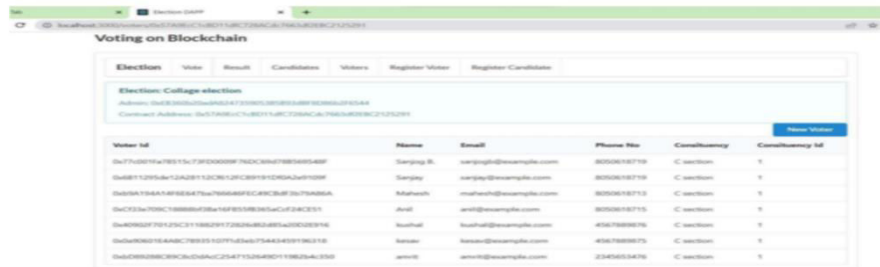Create the Consituencies for the election

Step 4:

Click on Register candidates & voter

VI.APPLICATION AND ADVANTAGES

Applications of Electronic Voting (e-Voting) System
The applications of e-Voting System are:
• Used in National Elections.
• Used in Television shows.
• Used in taking mass opinions.

Advantages of Electronic Voting (e-Voting) System
The advantages of Electronic Voting System are:
• Election process becomes fast.
• Accuracy and efficiency is high - It has become popular for its Ease of use.
• Process is confidential.
• Online Voting reduces election costs.

Disadvantages of Electronic Voting (e-Voting) System
The disadvantages of Electronic Voting (e-Voting) System are:
• Once the vote is cast it cannot be modified. Hence the voter or the user has to be sure of his selection.
• In case of voting through EVM's ,user need to go to the polling booth which might be inconvenient at times.
• Internet voting or remote voting might have issues regarding connectivity and delay associated with it.
• Risks of E-voting include security and data integrity.

VII. CONCLUSION AND FUTURE WORK

In this paper,we have discussed on the concept of secure digital voting method to make public elections more affordable,quick and simple.Additionally ,it makes a way for a direct democracy, enabling voters to cast their ballots online from anywhere in the world, and they can check to see if their vote was successfully polled .

 Blockchain technology presents a fresh opportunity for democratic nations to go past the   switching from a time   and money consuming paper election system to one that enhances the security measures in the current system while maintaining the current system's security measures and present fresh opportunities for enhancing transparency and security.

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